User Manual

Revision 1.000
English

M-Bus/M-Bus Wireless / KNX - Converter

(Order Code: HD67811-KNX-B2-xxx, HD67811-KNX-B2-xxxMHz-0, HD67811-KNX-B2-xxxMHz-xxx)

For Website information:
www.adfweb.com?Product=HD67811

For Price information:
www.adfweb.com?Price=HD67811-KNX-B2-20
www.adfweb.com?Price=HD67811-KNX-B2-40
www.adfweb.com?Price=HD67811-KNX-B2-80
www.adfweb.com?Price=HD67811-KNX-B2-160
www.adfweb.com?Price=HD67811-KNX-B2-250
www.adfweb.com?Price=HD67811-KNX-B2-868MHz-0
www.adfweb.com?Price=HD67811-KNX-B2-868MHz-20
www.adfweb.com?Price=HD67811-KNX-B2-868MHz-40
www.adfweb.com?Price=HD67811-KNX-B2-868MHz-80
www.adfweb.com?Price=HD67811-KNX-B2-868MHz-160
www.adfweb.com?Price=HD67811-KNX-B2-868MHz-250
www.adfweb.com?Price=HD67811-KNX-B2-169MHz-0
www.adfweb.com?Price=HD67811-KNX-B2-169MHz-20
www.adfweb.com?Price=HD67811-KNX-B2-169MHz-40
www.adfweb.com?Price=HD67811-KNX-B2-169MHz-80
www.adfweb.com?Price=HD67811-KNX-B2-169MHz-160
www.adfweb.com?Price=HD67811-KNX-B2-169MHz-250

Benefits and Main Features:

- Very easy to configure
- Triple electrical isolation
- Temperature range: -40°C/85°C (-40°F/185°F)

User Manual

Converter KNX to

www.adfweb.com?Product=HD67801	**(BACnet Master)**
www.adfweb.com?Product=HD67802	**(BACnet Slave)**
www.adfweb.com?Product=HD67803	**(CAN)**
www.adfweb.com?Product=HD67804	**(CANopen)**
www.adfweb.com?Product=HD67807	**(EtherNet/IP)**
www.adfweb.com?Product=HD67808	**(DeviceNet Master)**
www.adfweb.com?Product=HD67809	**(DeviceNet Slave)**
www.adfweb.com?Product=HD67810	**(J1939)**
www.adfweb.com?Product=HD67812	**(Modbus Master)**
www.adfweb.com?Product=HD67813	**(Modbus Slave)**
www.adfweb.com?Product=HD67814	**(Modbus TCP Master)**
www.adfweb.com?Product=HD67815	**(Modbus TCP Slave)**
www.adfweb.com?Product=HD67818	**(PROFINET Slave)**
www.adfweb.com?Product=HD67820	**(SNMP)**

Do you have an your customer protocol?
www.adfweb.com?Product=HD67003

Do you need to choose a device? do you want help?
www.adfweb.com?Cmd=helpme

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UPDATED DOCUMENTATION:

Dear customer, we thank you for your attention and we remind you that you need to check that the following document is:

- Updated
- Related to the product you own

To obtain the most recently updated document, note the "document code" that appears at the top right-hand corner of each page of this document.

With this "Document Code" go to web page www.adfweb.com/download/ and search for the corresponding code on the page. Click on the proper "Document Code" and download the updates.

REVISION LIST:

Revision	Date	Author	Chapter	Description
1.000	16/06/2015	Ff	All	First Release

WARNING:

ADFweb.com reserves the right to change information in this manual about our product without warning.
ADFweb.com is not responsible for any error this manual may contain.

TRADEMARKS:

All trademarks mentioned in this document belong to their respective owners.

SECURITY ALERT:

GENERAL INFORMATION

To ensure safe operation, the device must be operated according to the instructions in the manual. When using the device, legal and safety regulation are required for each individual application. The same applies also when using accessories.

INTENDED USE

Machines and systems must be designed so the faulty conditions do not lead to a dangerous situation for the operator (i.e. independent limit switches, mechanical interlocks, etc.).

QUALIFIED PERSONNEL

The device can be used only by qualified personnel, strictly in accordance with the specifications.
Qualified personnel are persons who are familiar with the installation, assembly, commissioning and operation of this equipment and who have appropriate qualifications for their job.

RESIDUAL RISKS

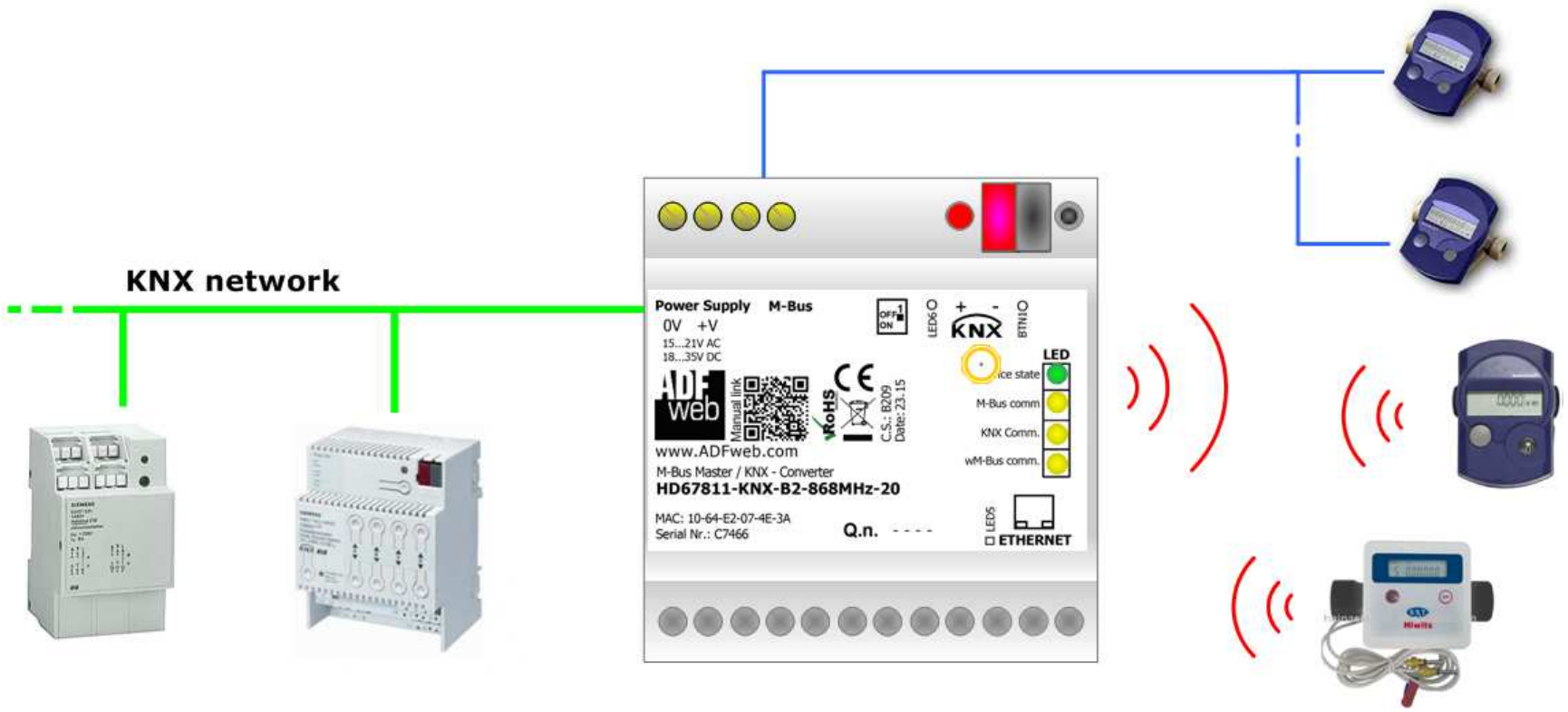
The device is state-of-the-art and is safe. The instruments can represent a potential hazard if they are inappropriately installed and operated by untrained personnel. These instructions refer to residual risks with the following symbol:

This symbol indicates that non-observance of the safety instructions is a danger for people that could lead to serious injury or death and / or the possibility of damage.

CE CONFORMITY

The declaration is made by our company. You can send an email to support@adfweb.com or give us a call if you need it.

EXAMPLE OF CONNECTION:



CONNECTION SCHEME:

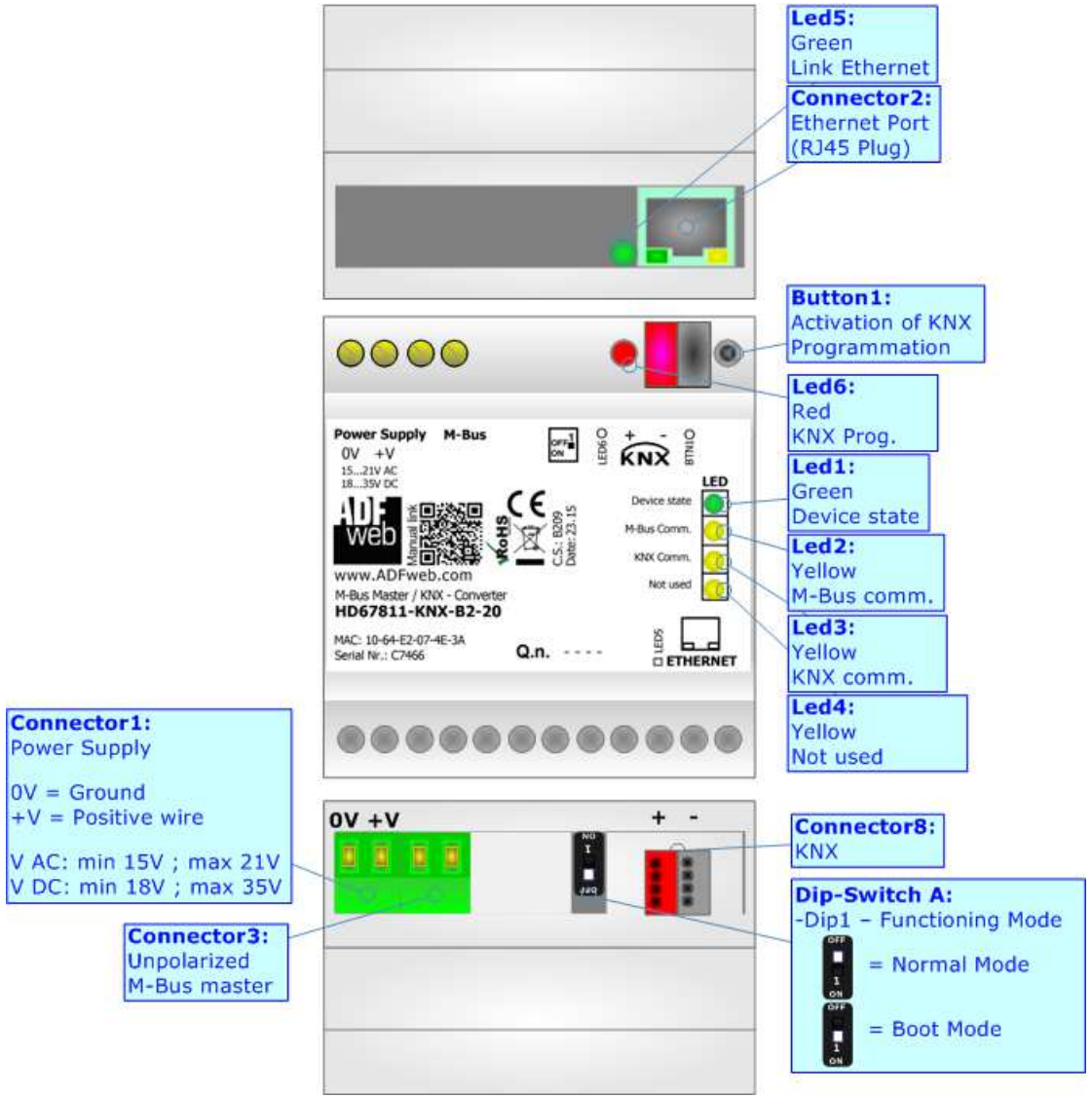


Figure 1a: Connection scheme for HD67811-KNX-B2-xxx

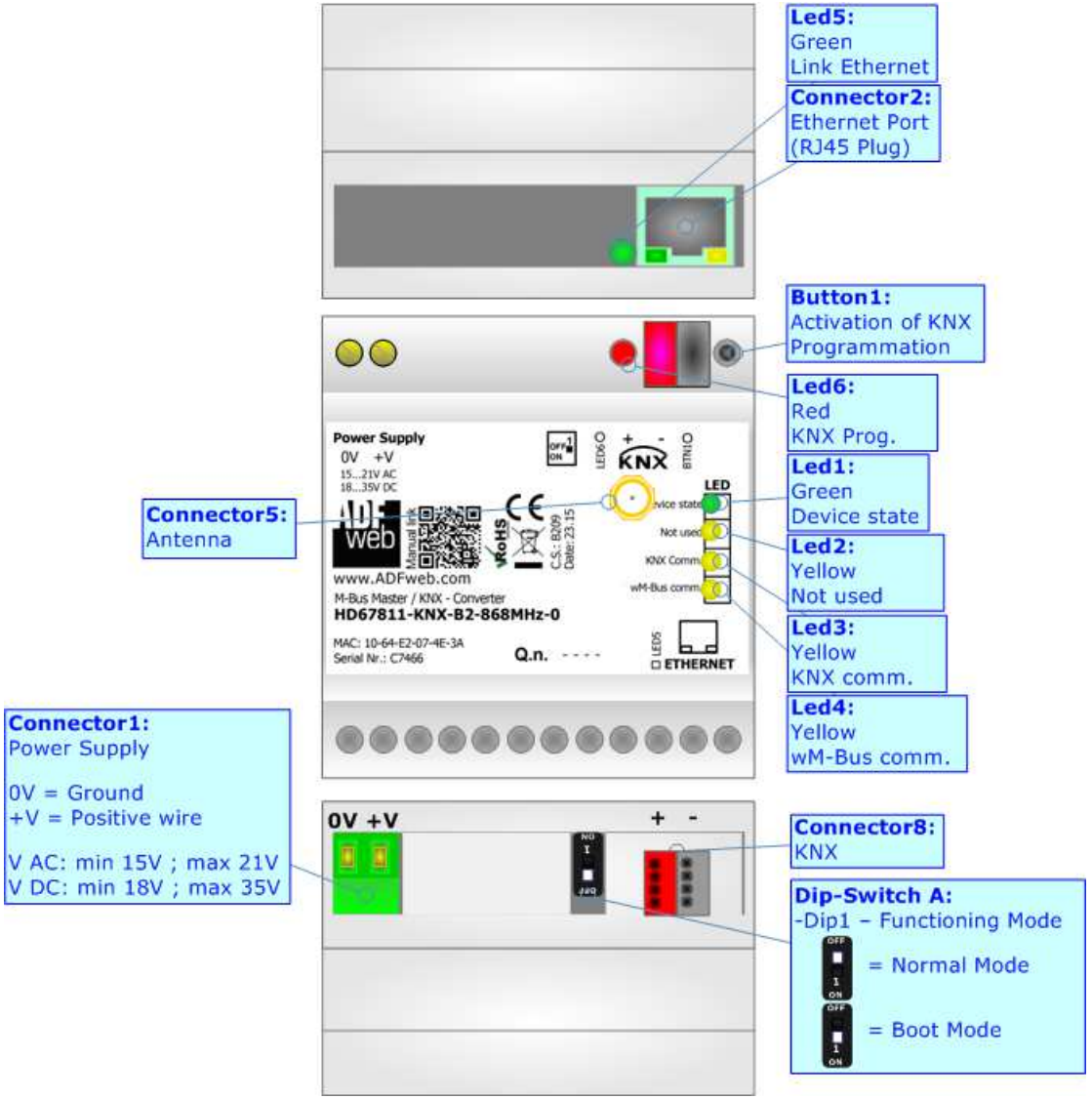


Figure 1b: Connection scheme for HD67811-KNX-B2-xxxMHz-0

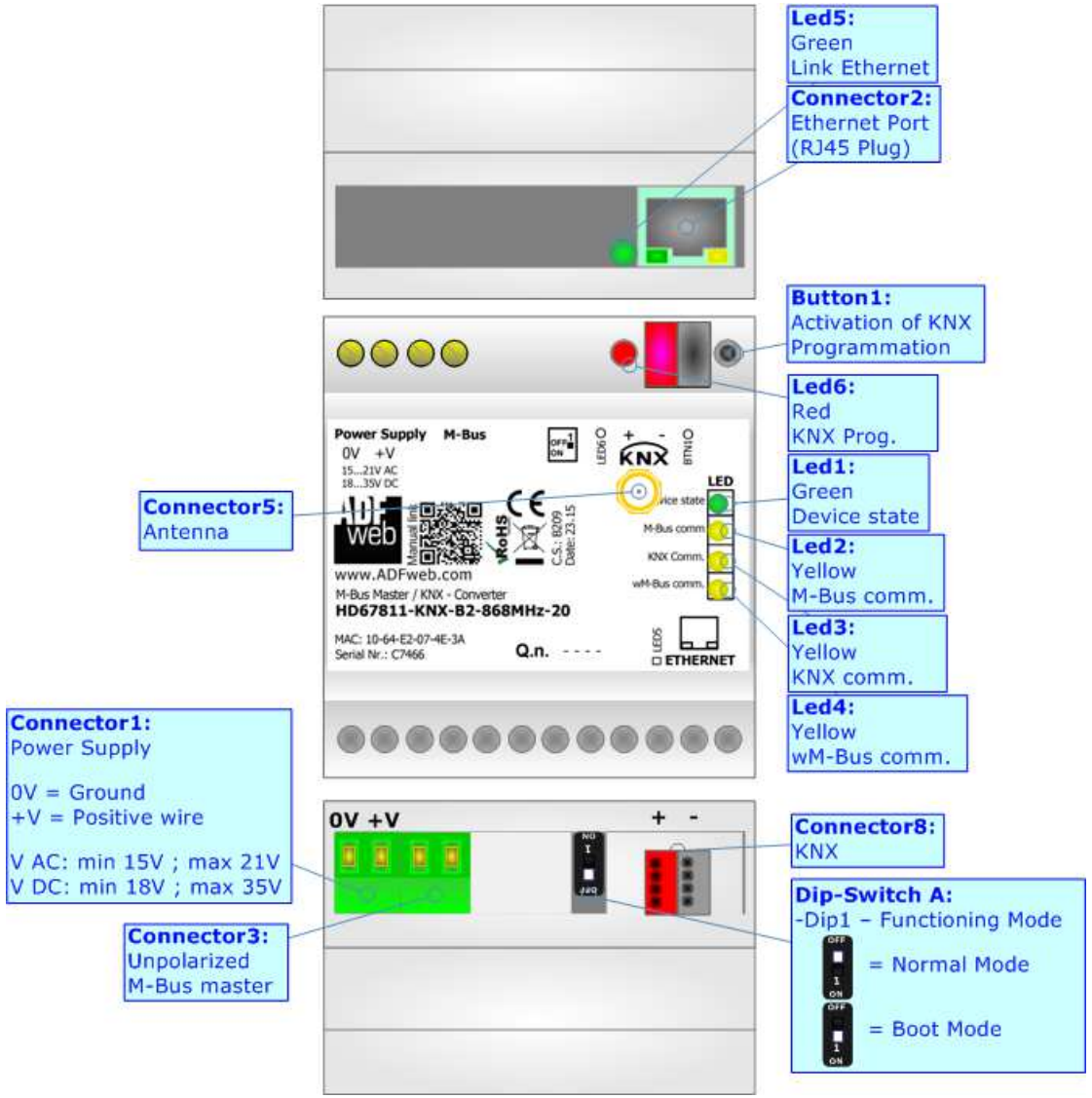


Figure 1c: Connection scheme for HD67811-KNX-B2-xxxMHz-xxx

CHARACTERISTICS:

The HD67811-KNX are converters from wM-Bus and M-Bus to KNX and vice-versa.

They allows the following characteristics:

- Electrical isolation between KNX and M-Bus/wM-Bus;
- Baud Rate and Parity (for M-Bus on wire) changeable with software;
- Available wM-Bus frequency: 169 MHz or 868 MHz (in relation to the order code);
- Mountable on 35mm Rail DIN;
- Wide power supply input range: 15…21V AC or 18…35V DC;
- Wide temperature range: -40°C / 85°C [-40°F / +185°F].

CONFIGURATION:

You need Compositor SW67811 software on your PC in order to perform the following:

- Define the parameter of KNX;
- Define the parameter of M-Bus line;
- Define the parameter of wM-Bus line;
- Define which M-Bus variables are readable on KNX;
- Update the device.

POWER SUPPLY:

The devices can be powered at 15…21V AC and 18…35V DC. The consumption depends to the code of the device. For more details see the two tables below.

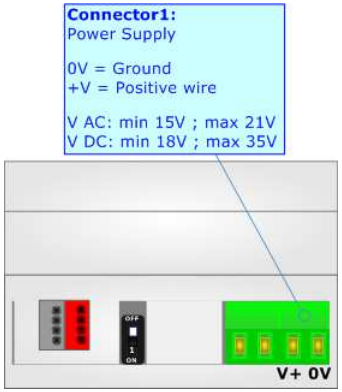
VAC ~		VDC ⎓	
Vmin	**Vmax**	**Vmin**	**Vmax**
15V	**21V**	**18V**	**35V**

Consumption at 24V DC:

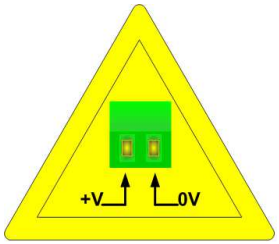
Device	[W/VA]
HD67811-KNX-B2-xxxMHz-0	3.5

Device	No Load [W/VA]	Full Load [W/VA]*
HD67811-KNX-B2-xxxMHz-20, HD67811-KNX-B2-20	3.5	4
HD67811-KNX-B2-xxxMHz-40, HD67811-KNX-B2-40		5
HD67811-KNX-B2-xxxMHz-80, HD67811-KNX-B2-80		8
HD67811-KNX-B2-xxxMHz-160, HD67811-KNX-B2-160		14
HD67811-KNX-B2-xxxMHz-250, HD67811-KNX-B2-250		30

* This value is with all the Slave M-Bus devices of the code (20, 40, 80, 160, 250) connected to the line (wired side)



Caution: Not reverse the polarity power



HD67811-KNX-B2-xxx
HD67811-KNX-B2-xxxMHz-0
HD67811-KNX-B2-xxxMHz-xxx

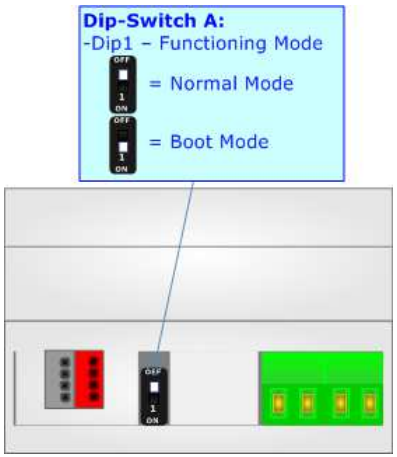
FUNCTION MODES:

The device has got two functions mode depending of the position of the 'Dip1 of Dip-Switch A':

- The first, with 'Dip1 of Dip-Switch A' at "OFF" position, is used for the normal working of the device;
- The second, with 'Dip1 of Dip-Switch A' at "ON" position, is used for uploading the Project and/or Firmware.

For the operations to follow for the updating, see 'UPDATE DEVICE' section.

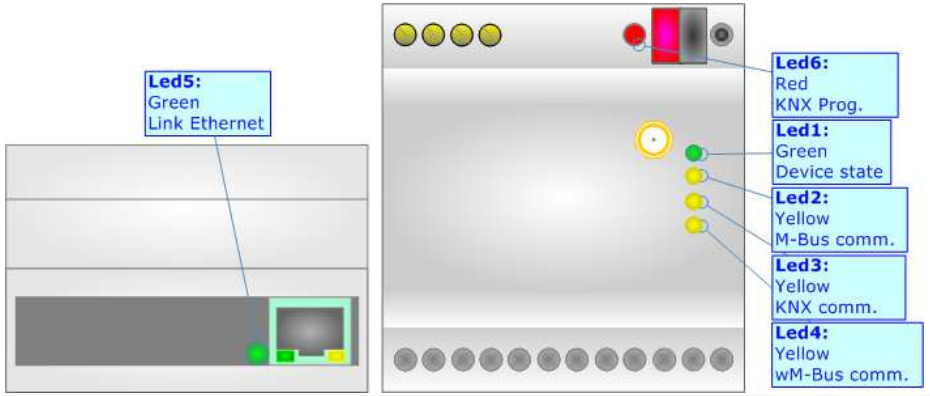
According to the functioning mode, the LEDs will have specifics functions, see 'LEDS' section.



LEDS:

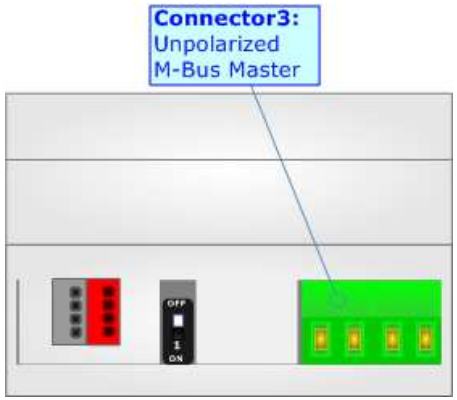
The device has got six LEDs that are used to give information of the functioning status.
The various meanings of the LEDs are described in the table below.

LED	Normal Mode	Boot Mode
1: Device State (green)	Blinks slowly (~1Hz)	**ON:** Device powered **OFF:** Device not powered
2: M-Bus communication (yellow) (only if M-Bus port is present)	Blinks when correct M-Bus frame is received	**Blinks quickly:** Boot state **Blinks very slowly (~0.5Hz):** update in progress
3: KNX communication (yellow)	Blinks when KNX frame is received	**Blinks quickly:** Boot state **Blinks very slowly (~0.5Hz):** update in progress
4: wM-Bus communication (yellow) (only if wM-Bus port is present)	Blinks when correct wM-Bus frame is received	**Blinks quickly:** Boot state **Blinks very slowly (~0.5Hz):** update in progress
5: Ethernet Link (green)	**ON:** Ethernet cable connected **OFF:** Ethernet cable disconnected	**ON:** Ethernet cable connected **OFF:** Ethernet cable disconnected
6: KNX Programmation (red)	**ON:** KNX Programmation activated **OFF:** KNX Programmation not activated	**Blinks quickly:** Boot state **Blinks very slowly (~0.5Hz):** update in progress



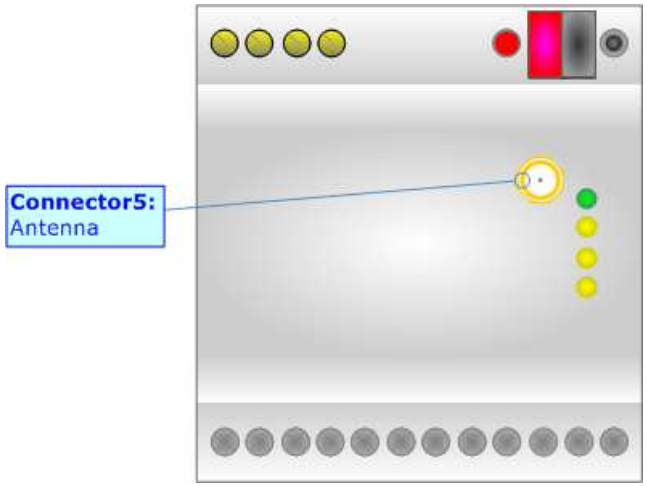
M-BUS:

The M-Bus is a unpolarized bus.
A two wire standard telephone cable (JYStY N*2*0.8 mm) is used as the transmission medium for the M-Bus. The maximum distance between a slave and the repeater is 350m; this length corresponds to a cable resistance of up 29Ω. This distance applies for the standard configuration having Baud rates between 300 and 9600 Baud, and a maximum of 250 slaves. The maximum distance can be increased by limiting the Baud rate and using fewer slaves, but the bus voltage in the space state must at no point in a segment fall below 12V, because of the remote powering of the slaves. In the standard configuration the total cable length should not exceed 1000m, in order to meet the requirement of a maximum cable capacitance of 180nF. *(Taken from M-Bus specifics)*



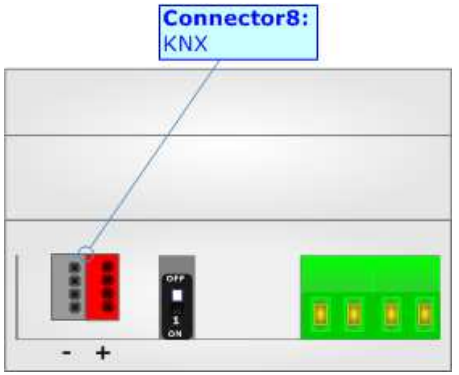
WM-BUS:

The standards of wM-Bus are specified in EN 13757-4. The signal is @ 868Mhz or 169 MHz (in relation to the order code). Our converter supports wM-Bus Mode S1 and Mode T1.
The Antenna connector is a SMA Female ('Female Outer Shell' and 'Female Receptacle') so the Antenna must have a SMA Male connector.



KNX:

KNX is the standard that allows the automated and decentralized management of the technologic plans of a big typology of structures: commercial buildings, factories, houses, public locals, schools and so on.
KNX can be used in all the applications and functions for the building automations: from lighting to control dampers, to the security, to the heating monitoring, to the conditioning, to the hydric control and alarms, to energy management and so on.

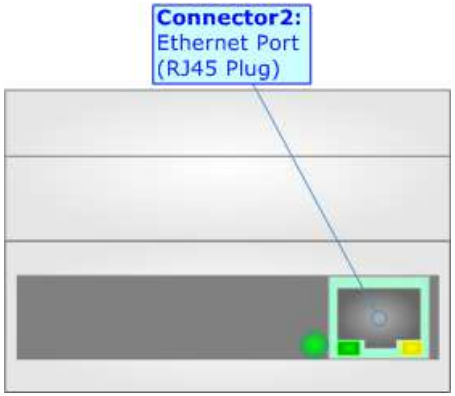


Characteristics	Description TP1-256
Medium	Shielded Twisted Pair
Topology	Linear, Star, Tree or mixed
Baudrate	9600 bps
Device supplying	Normal: bus powered devices Optional: remote powered devices
Device power consumption	3 mA- 12 mA
Power Supply Unit (PSU)	DC 30 V
Number of PSU's per physical Segment	Max. 2
Number of connectable devices per physical Segment	Max. 256
Number of addressable devices per physical Segment	Max. 255
Total cable length per physical Segment	Max. 1000 m
Distance between two devices	Max. 700 m

(*) Taken from KNX specifications

ETHERNET (PROGRAMMING PORT):

The Ethernet port is used for programming the device.
The Ethernet connection must be made using Connector2 of HD67811-KNX with at least a Category 5E cable. The maximum length of the cable should not exceed 100m. The cable has to conform to the T568 norms relative to connections in cat.5 up to 100 Mbps. To connect the device to an Hub/Switch is recommended the use of a straight cable, to connect the device to a PC/PLC/other is recommended the use of a cross cable.



USE OF COMPOSITOR SW67811:

To configure the Converter, use the available software that runs with Windows called SW67811. It is downloadable from the site www.adfweb.com and its operation is described in this document *(this manual is referenced to the last version of the software present on our web site)*. The software works with MSWindows (XP, Vista, Seven, 8; 32/64bit).

When launching the SW67811, the window below appears (Fig. 2).

Note:
It is necessary to have installed .Net Framework 4.

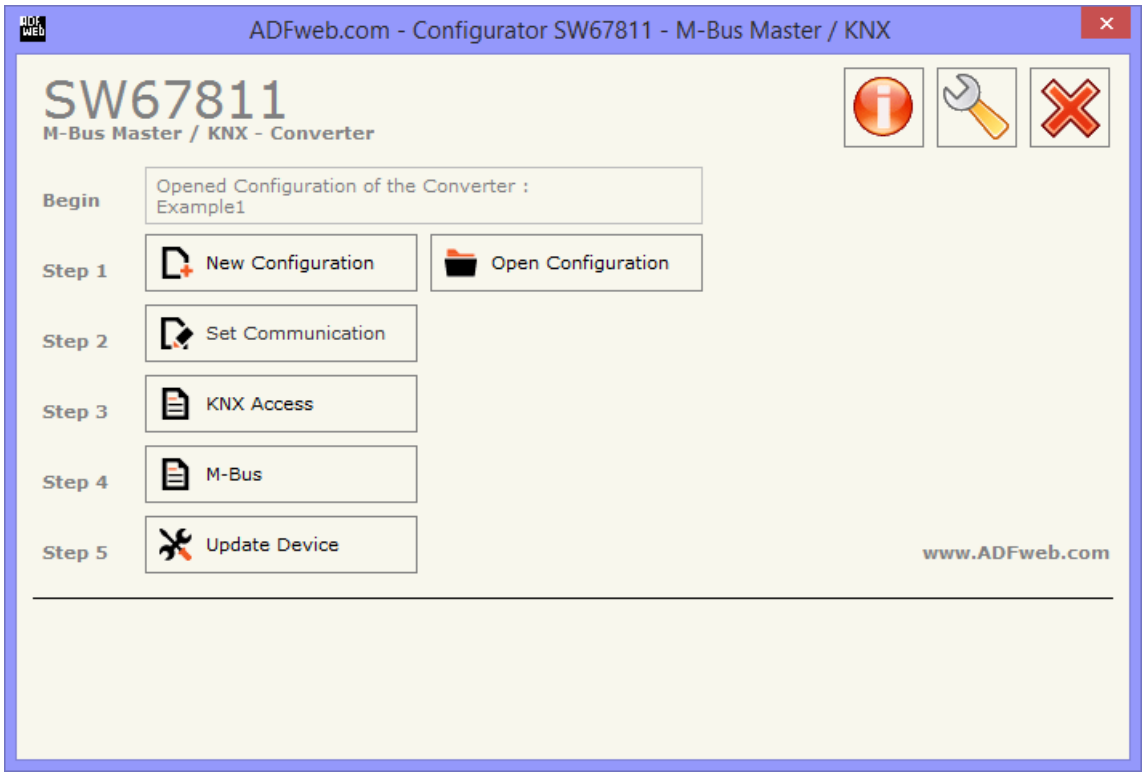
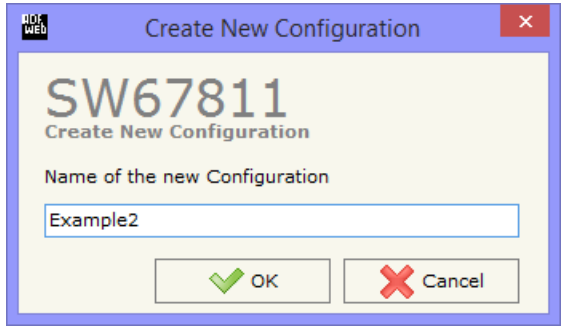


Figure 2: Main window for SW67811

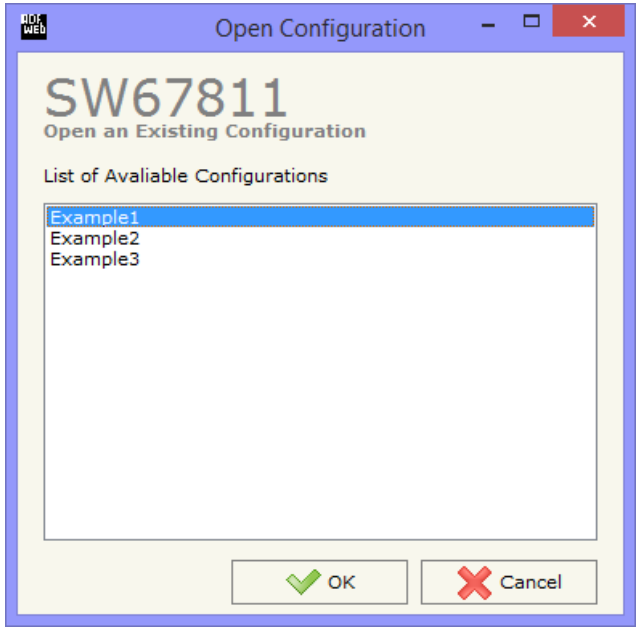
NEW CONFIGURATION / OPEN CONFIGURATION:

The "**New Configuration**" button creates the folder which contains the entire device's configuration.



A device's configuration can also be imported or exported:

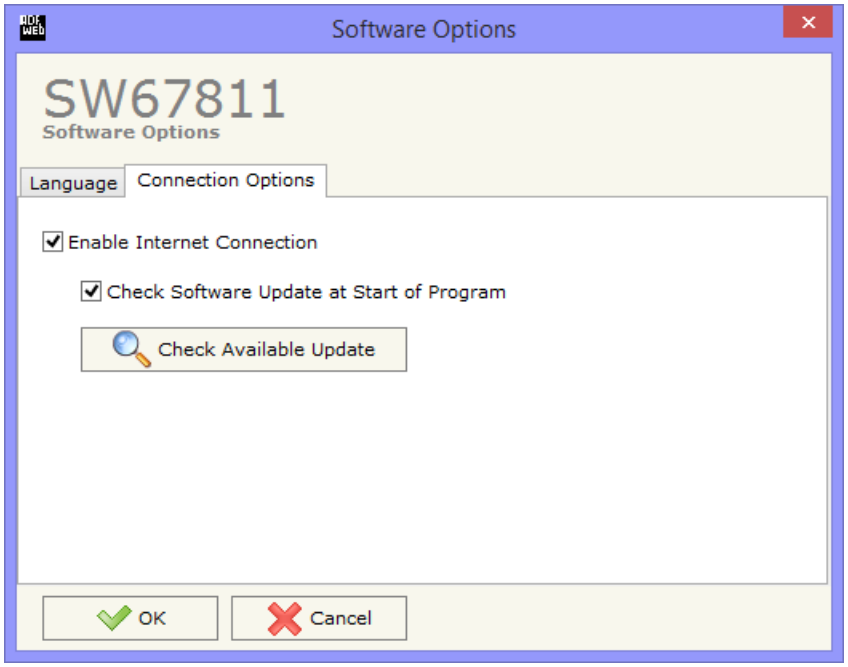
- To clone the configurations of a Programmable "M-Bus/M-Bus Wireless / KNX - Converter" in order to configure another device in the same manner, it is necessary to maintain the folder and all its contents;
- To clone a project in order to obtain a different version of the project, it is sufficient to duplicate the project folder with another name and open the new folder with the button "**Open Configuration**".



SOFTWARE OPTIONS:

By pressing the "**Settings**" ( ) button there is the possibility to change the language of the software and check the updatings for the compositor.

In the section "Language" it is possible to change the language of the software.



In the section "Connection Options", it is possible to check if there are some updatings of the software compositor in ADFweb.com website.
Checking the option "**Check Software Update at Start of Program**", the SW67811 check automatically if there are updatings when it is launched.

SET COMMUNICATION:

This section define the fundamental communication parameters of the three buses, KNX, M-Bus and/or wM-Bus.

By Pressing the "**Set Communication**" button from the main window for SW67811 (Fig. 2) the window "Set Communication" appears (Fig. 3). The window is divided in two sections.

The means of the fields for "KNX" are:

- In the field "**Type**" the type of KNX is defined (fixd to 'KNX TP');
- In the field "**ID Device**" the ID of the KNX side of the converter is defined.

The means of the fields for "M-Bus Option" are:

- In the field "**M-Bus on Wire**" it is possible to define if the M-Bus port is present or not;
- In the field "**M-Bus Wireless**" it is possible to define if the wM-Bus port is present or not.

The means of the fields for "M-Bus" are (present only if the M-Bus port is "Present"):

- In the field "**Baudrate**" it is possible to select the baudrate of the M-Bus line;
- In the field "**Parity**" it is possible to select the parity of the line;
- If the field "**Cyclic Delay (s)**" it is possible to define the delay with which the converter polls the M-Bus slaves;
- In the field "**Node State value when slave device is not present**" it is possible to insert the value to assign to the "Node State" when the Gateway doesn't find the interrogated M-Bus slave.

The means of the fields for "M-Bus Option" are:

- In the field "**Mode**" it is possible to select the Communication Mode (S1 or T1 for 868 MHz version and N1 or N2 for 169 MHz version) used for the M-Wireless Communication;
- In the field "**Radio Channel**" it is possible to define the Radio Channel used for the wM-Bus communication (only for 169 MHz version).

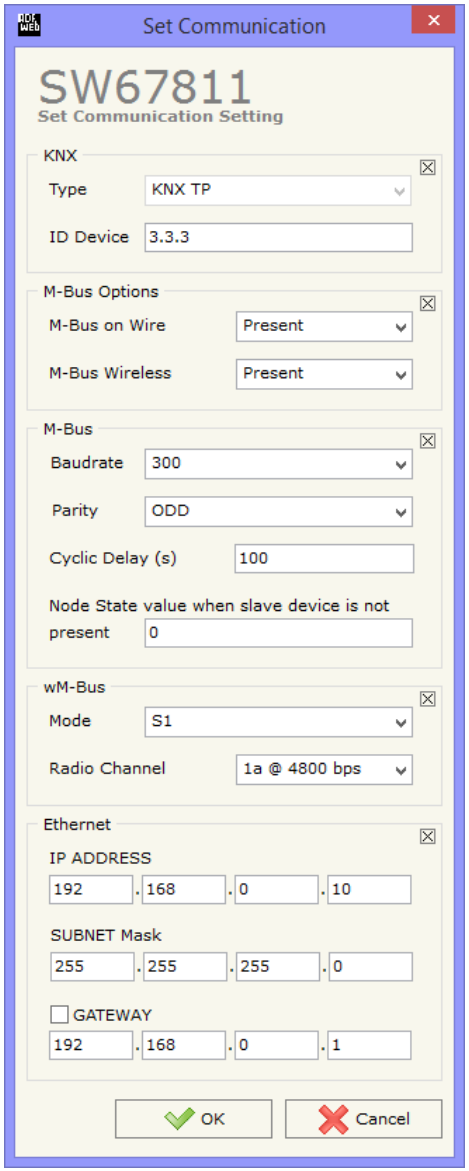


Figure 3: "Set Communication" window

The means of the fields for "Ethernet" are (programming port):

- In the field "**IP ADDRESS**" insert the IP address that you want to give to the Converter;
- In the field "**SUBNET Mask**" insert the SubNet Mask;
- In the field "**GATEWAY**" insert the default gateway that you want to use. This feature can be enabled of disabled pressing the Check Box field.

KNX ACCESS:

By pressing the "**KNX Access**" button from the main window for SW67811 (Fig. 2) the "KNX Set Access" window appears (Fig. 4).
In this section it is possible to define which KNX message the converter will send and which data they will contain.

The means of the fields are:

- If the field "**Enable**" is checked, the KNX message is enabled;
- In the field "**Source Address**" the Source Address to assign to the KNX message is defined;
- In the field "**Dest/Group** the Group address (2 level structure, 3 level structure or free address structure) or the device address is defined. In case of Group address, the levels must be separated by '/', in case of Device address, the parts of the address must be separated by '.';

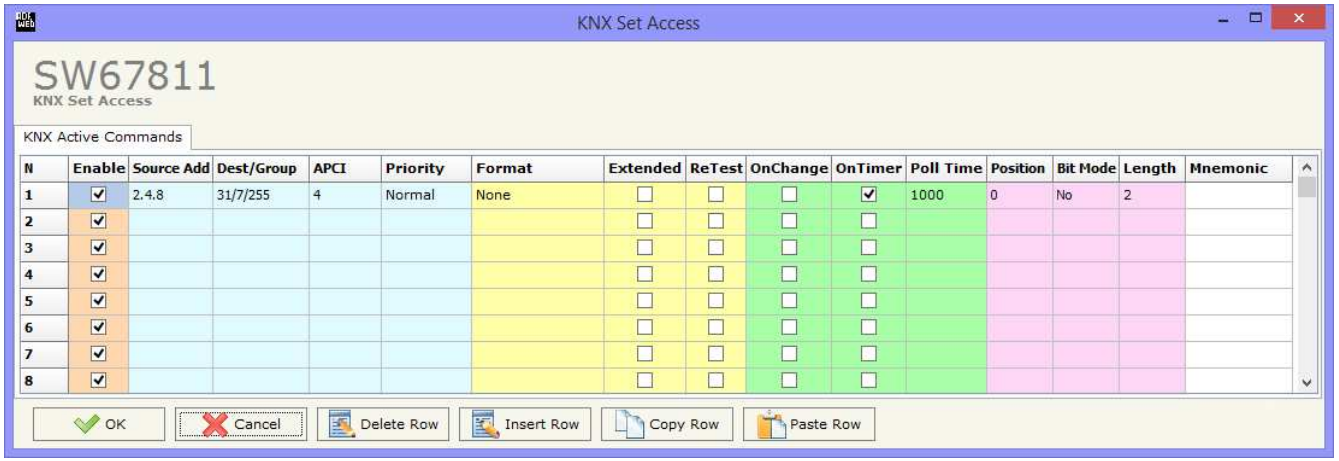

KNX Set Access
SW67811
KNX Set Access
KNX Active Commands
N | Enable | Source Add | Dest/Group | APCI | Priority | Format | Extended | ReTest | OnChange | OnTimer | Poll Time | Position | Bit Mode | Length | Mnemonic
1 | 2.4.8 | 31/7/255 | 4 | Normal | None | 1000 | 0 | No | 2
2
3
4
5
6
7
8
OK
Cancel
Delete Row
Insert Row
Copy Row
Paste Row

Figure 4: "KNX Access→KNX Active Commands" window

- In the field "**APCI**" the APCI of the KNX message is defined. You can choose between the following:
  - Read;
  - Write;
  - Specific value (edited manually).
- In the field "**Priority**" the Priority of the KNX message is defined. You can choose between the following:
  - System (Highest);
  - Urgent;
  - Normal;
  - Low (Lowest).
- If the field "**Format**" is checked, the format of the data of the KNX message is defined;
- If the field "**Extended**" is checked, the extended format of the KNX message is used;

- If the field "**ReTest**" is checked, the KNX message is re-sent in case of not correct response;
- If the field "**On Change**" is checked, the gateway sends the KNX command when the data on M-Bus/wM-Bus change the value;
- If the field "**On Timer**" is checked, the gateway sends the KNX command cyclically;
- In the field "**Poll Time**" the delay in ms between two KNX commands is defined (if "On Timer" is checked);
- In the field "**Position**" insert the address of the internal array where place the information;
- In the field "**Bit Mode**" insert the start bit of the first byte of the field "Position" where start to insert the data read;
- In the field "**Lenght**" the dimension of the KNX message is defined;
- In the field "**Mnemonic**" the description for the request is defined.

M-BUS

By Pressing the "**M-Bus**" button from the main window for SW67811 (Fig. 2) the window "M-Bus Network" appears (Fig. 5).

In the section "Nodes" it is possible to create the nodes of M-Bus line:

- In the field "**Description**" it is possible to write a short description of the node.
- In the field "**M-Bus Type**" it is possible to select if the node uses M-Bus (on wire) or wM-Bus.

SECTION NODES (M-BUS NODES):

- In order to create a new node it is necessary to select which address use, selecting "**Primary ID**" or "**Secondary ID**", to makes the requests and then insert the "Primary Address" (from 1 to 250) or the Secondary Address" (from 0 to 99999999) of M-Bus device.
- If the field "**Node State**" is checked the gateway reserve one byte at the starting of internal data array and saves the status of the counter.
- If the field "**Identification Number**" is checked the gateway reserve four bytes at the starting of internal data array and saves the Secondary Address of the device.
- If the field "**Convert BCD in Integer Identification Num.**" is checked the Converter converts the Identification Number that is normally expressed in BCD in a Integer.
- In the field "**Swap Identification Num.**" it is possible to select the swap mode of the Identification Number. If swap isn't necessary you have to select "None"; otherwise see the section "Swap Identification" (page 34) of this document for select the swap mode.
- If the field "**Send SND_NKE**" is checked, the Converter send the "SND_NKE" frame to start the communication.

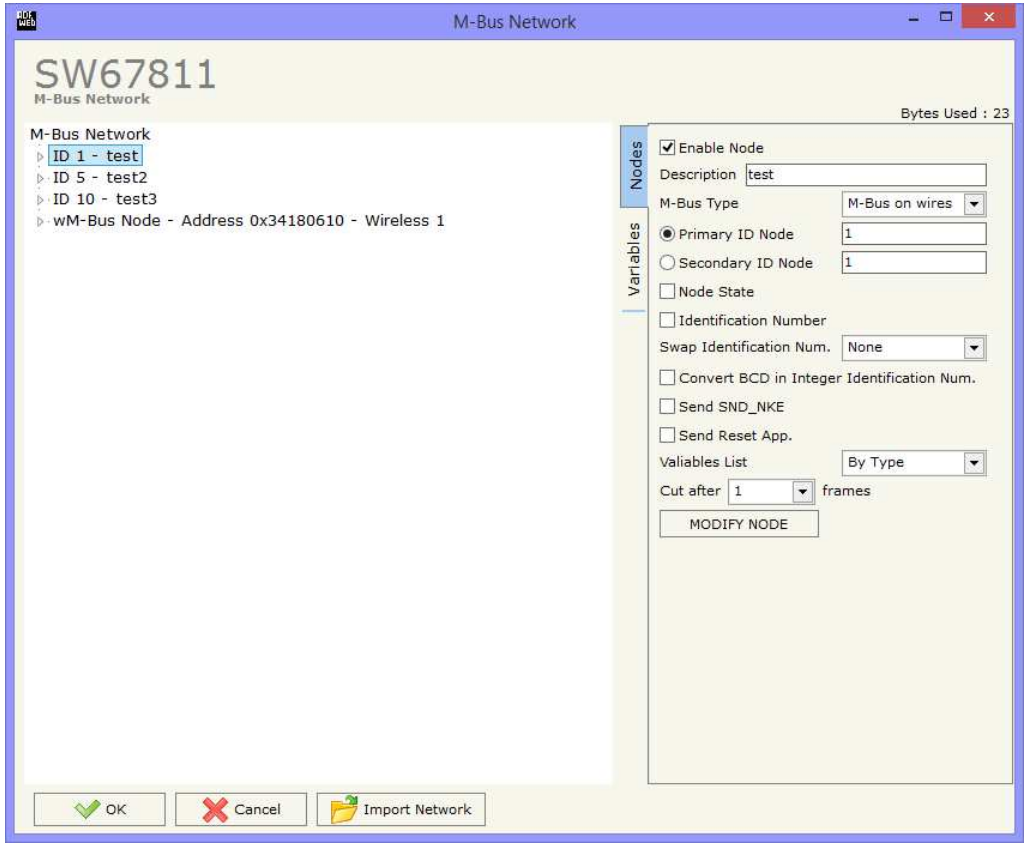


Figure 5a: "M-Bus Network" window

- In the field "**Send Reset App.**" Is checked the Converter send the "Application Reset" command to the slave.
- In the field "**Variables List**" it is possible to select which type of variables definition to use. If is selected "By Type" it is necessary to fill all fields, in the section Variables, with the correct values; otherwise if "By Position" is selected you can insert the progressive number of the variable that you need (page 29 for more information).
- In the field "**Cut after**" it is possible to select after how many frames stops data requests. It is used when the slave has got many data frames and you don't need to read all them.

After that, pressing the "**ADD NODE**" button, a new node appears in the left side of the window. In order to modify a created node it is necessary to select the desired node, change the wrong items and then press the "**MODIFY NODE**" button.

SECTION NODES (WM-BUS NODES):

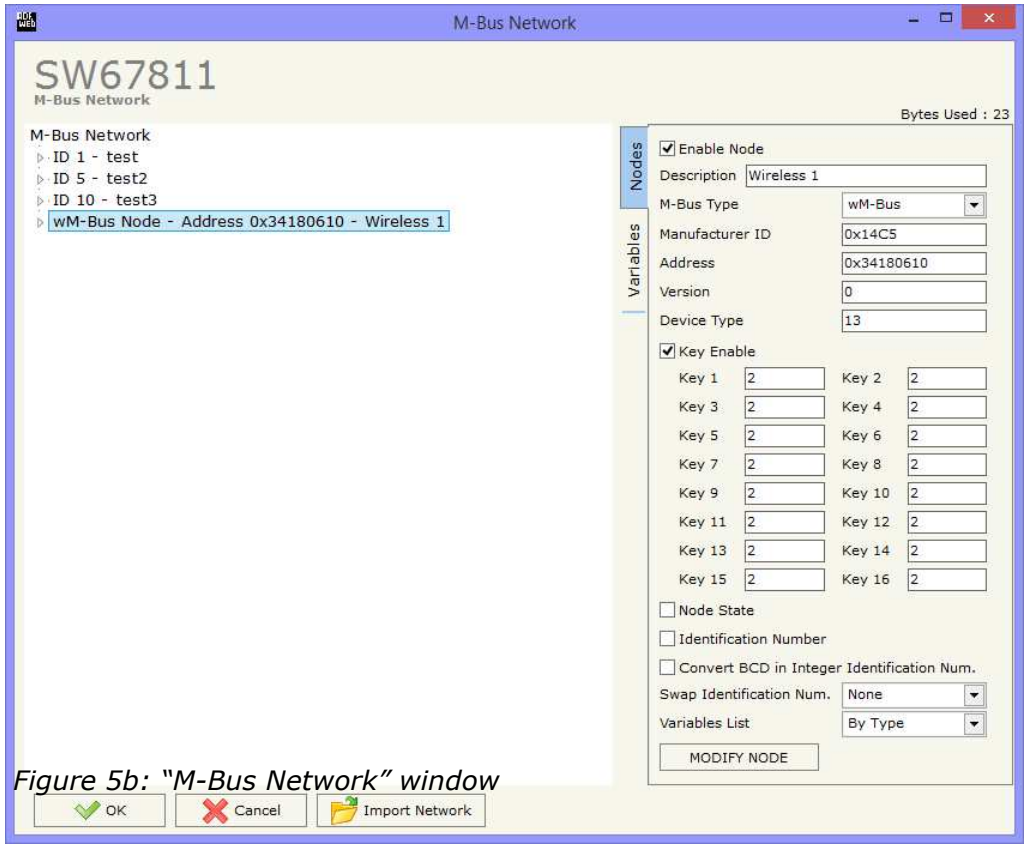


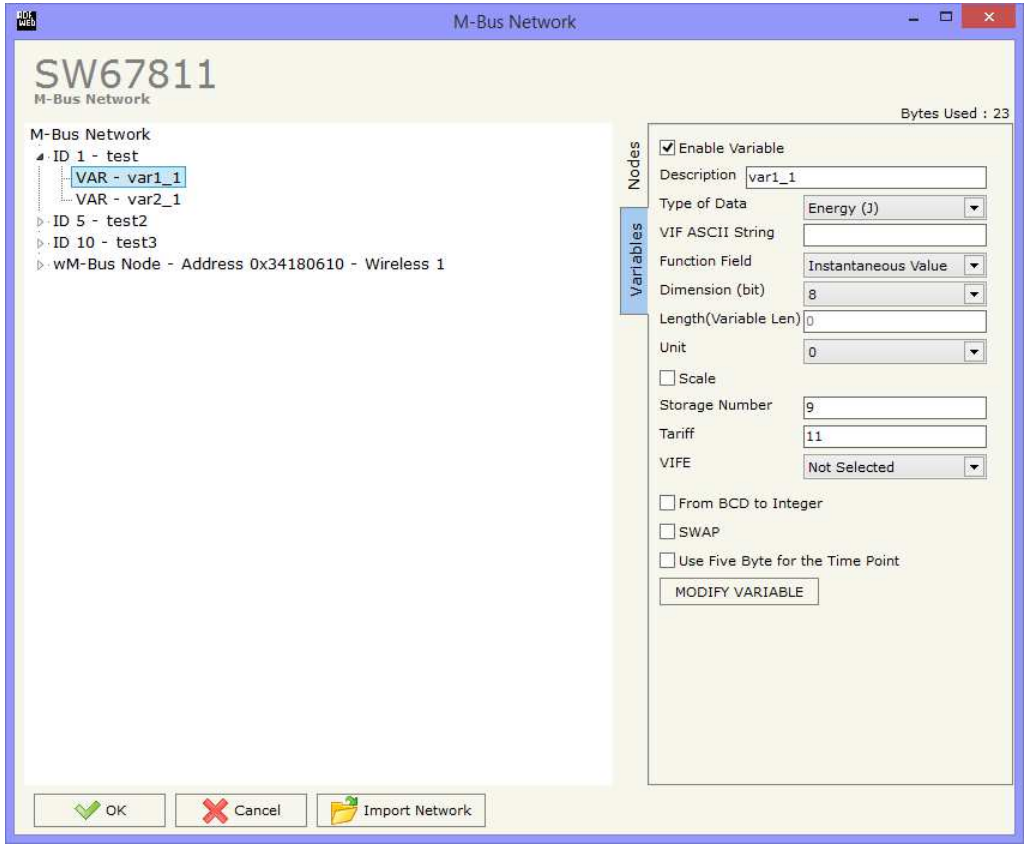
Figure 5b: "M-Bus Network" window

- In the field "**Manufacturer ID**" it is necessary to define the Manufacturer ID of the wM-Bus node.
- In the field "**Address**" it is necessary to define the ID of the wM-Bus node.
- If the field "**Version**" it is necessary to define the version of the wM-Bus node.
- In the field "**Device Type**" it is possible to define the Type of the wM-Bus node.
- The field "**Key Enable**" is used to decode the M-Bus frame sent by the wM-Bus node if it uses encrypted communication. In the following 16 fields, you have to specify the key to decode the message.
- If the field "**Node State**" is checked the gateway reserve one byte at the starting of internal data array and saves the status of the counter.
- If the field "**Identification Number**" is checked the gateway reserve four bytes at the starting of internal data array and saves the Secondary Address of the device.
- If the field "**Convert BCD in Integer Identification Num.**" is checked the Converter converts the Identification Number that is normally expressed in BCD in a Integer.
- In the field "**Swap Identification Num.**" it is possible to select the swap mode of the Identification Number. If swap isn't necessary you have to select "None"; otherwise see the section "Swap Identification" (page 34) of this document for select the swap mode.
- In the field "**Variables List**" it is necessary to select which type of variables definition to use. If is selected "By Type" it is necessary to fill all fields, in the section Variables, with the correct values; otherwise if "By Position" is selected you can insert the progressive number of the variable that you need (page 29 for more information).

After that, pressing the "**ADD NODE**" button, a new node appears in the left side of the window. In order to modify a created node it is necessary to select the desired node, change the wrong items and then press the "**MODIFY NODE**" button.

SECTION VARIABLES (BY TYPE):

Selecting the desired node it is possible to add a variable. In order to create a new variable it is necessary to fill these items:



- To use the created variable the field "**Enable Variable**" must be checked. If you have created a variable but for the moment it is unused it is possible to uncheck the field "Enable Variable" without delete it;
- In the field "**Description**" it is possible to write a description of the variable (it isn't a necessary information,
- it helps the readability of the tree of network);
- The field "**Type of Data**" is used to select the unit of measure;
- In the field "**VIF ASCII String**" insert the string of VIF. It is possible to use this field only if the "Type of Data" is "VIF is in ASCII";
- In the field "**Function Field**" it is necessary to select the type of data;
- The field "**Dimension**" is used to select the dimension of the variable (8, 16, 24, 32, 32 real, 48, 64 bit, Variable Length);
- In the field "**Length(Variable Len)**" insert the length of the data in the case of the dimension is "Variable Length";
- In the field "**Unit**" if it is necessary it is possible to select the unit of that variable. The Unit is used for indicates from which device the data come;
- If the field "**Scale**" is checked, the scale of the variable is saved (1 byte) (see page 35 for more info);
- In the field "**Storage Number**" if it is necessary it is possible to insert the value of storage counter of that variable. With this field the slave can indicate and transmit various stored counter states or historical values, in the order in which they occur;
- In the field "**Tariff**" if it is necessary it is possible to insert the value of the tariff of that variable. The Tariff is used for indicates from which device the data come;
- In the field "**VIFE**" it is possible to select a sub-type of "Type of Data";

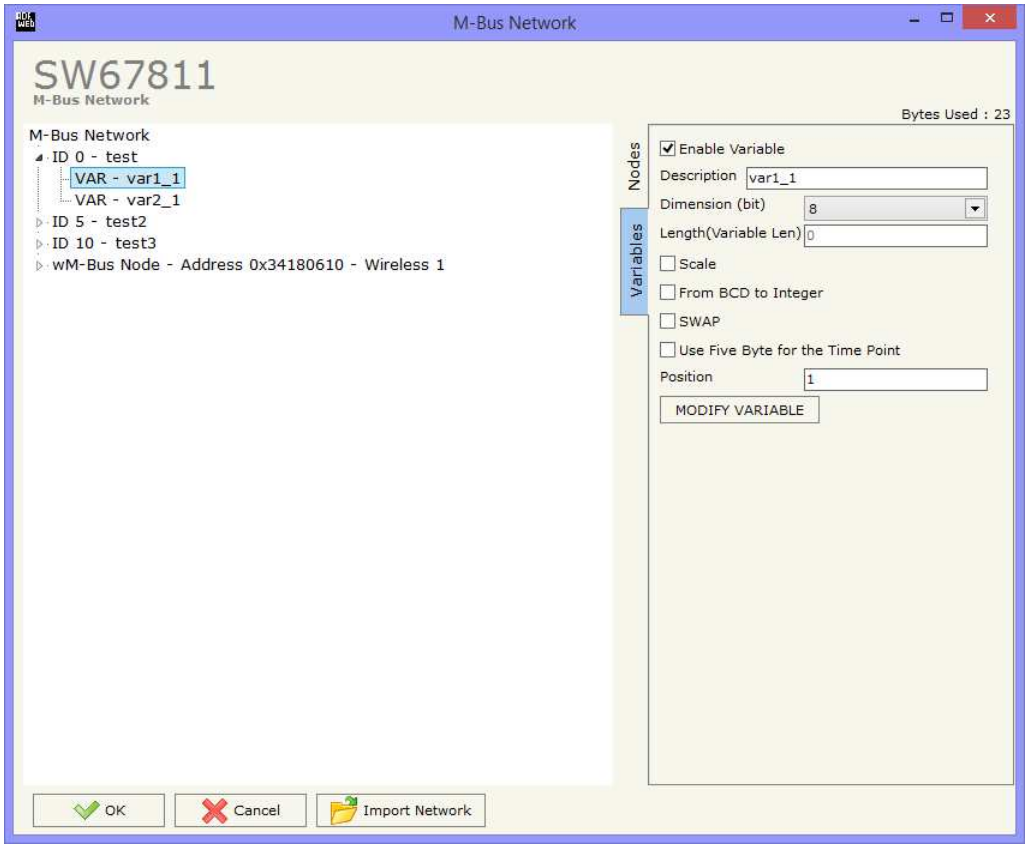
- If the field "**From BCD to Integer**" is checked the Converter converts the BCD value of variable in Integer format. This happens only if the variable is in BCD format; if it isn't nothing changes.
- If the field "**SWAP**" is checked the Converter swaps the Data Bytes.
- If the field "**Use Five Byte for the Time Point**" and the "Type of Data" is "Time Point" it is possible to read the information of Year, Month, Day, Hour, Minutes on five consecutive bytes without decoding the data (if not selected the values are the same of the reply of the slave device, so coded with a determinate structure).

Having completed this fields, to add the variable the button "**ADD VARIABLE**" must be pressed.

In order to modify a created variable it is necessary to select the desired variable, change the wrong items and then press the "**MODIFY VARIABLE**" button.

SECTION VARIABLES (BY POSITION):

Selecting the desired node it is possible to add a variable. In order to create a new variable it is necessary to fill these items:

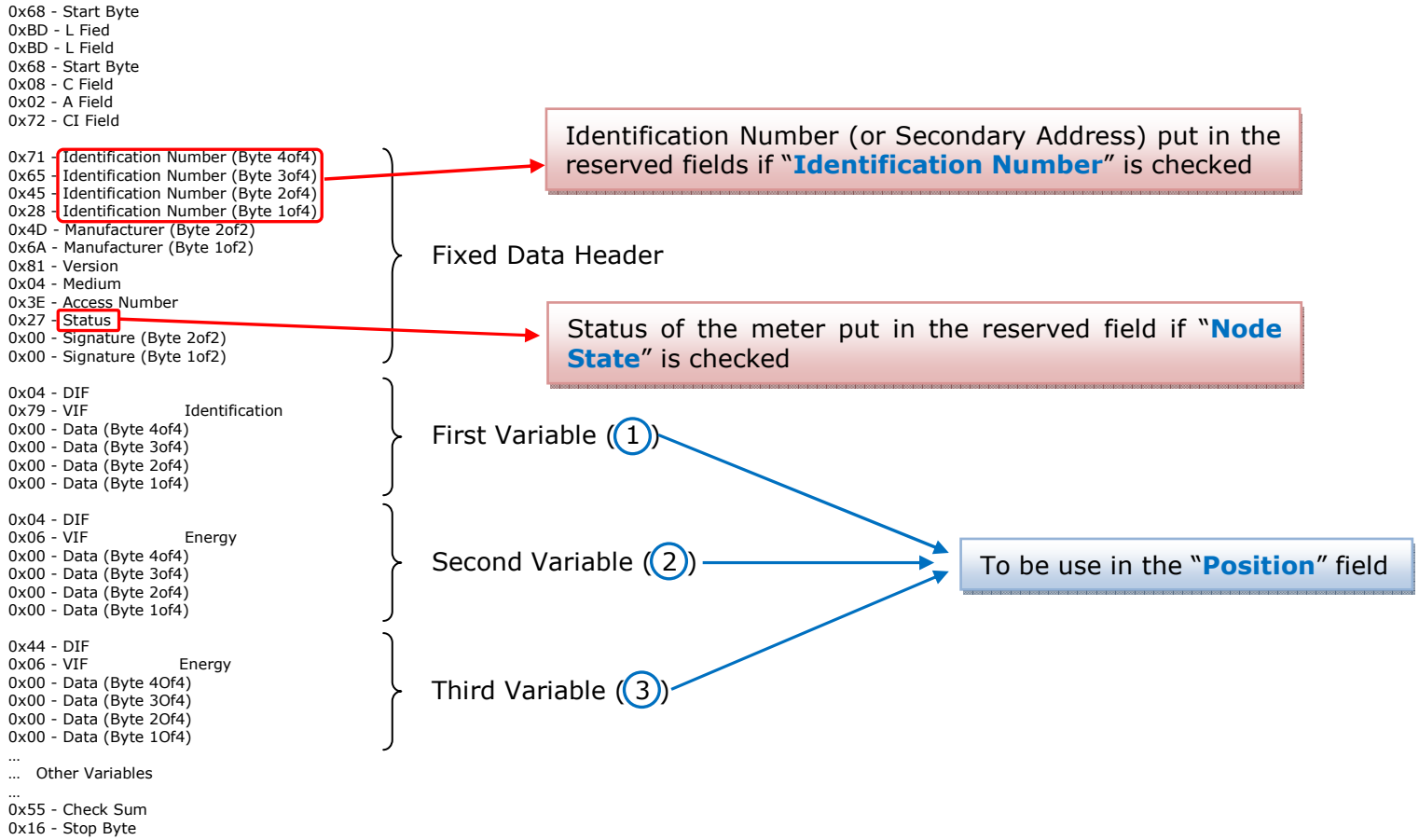


- To use the created variable the field "**Enable Variable**" must be checked. If you have created a variable but for the moment it is unused it is possible to uncheck the field "Enable Variable" without delete it;
- In the field "**Description**" it is possible to write a description of the variable (it isn't a necessary information, it helps the readability of the tree of network);
- The field "**Dimension**" is used to select the dimension of the variable (8, 16, 24, 32, 32 real, 48, 64 bit, Variable Length);
- In the field "**Length(Variable Len)**" insert the length of the data in the case of the dimension is "Variable Length";
- If the field "**Scale**" is checked, the scale of the variable is saved (1 byte) (see page 35 for more info);
- If the field "**From BCD to Integer**" is checked the Converter converts the BCD value of variable in Integer format. This happens only if the variable is in BCD format; if it isn't nothing changes.
- If the field "**SWAP**" is checked the Converter swaps the Data Bytes.
- If the field "**Use Five Byte for the Time Point**" and the "Type of Data" is "Time Point" it is possible to read the information of Year, Month, Day, Hour, Minutes on five consecutive bytes without decoding the data (if not selected the values are the same of the reply of the slave device, so coded with a determinate structure).
- In the field "**Position**" insert the number of the variable that you want on KNX.

Having completed this fields, to add the variable the button "**ADD VARIABLE**" must be pressed.

In order to modify a created variable it is necessary to select the desired variable, change the wrong items and then press the "**MODIFY VARIABLE**" button.

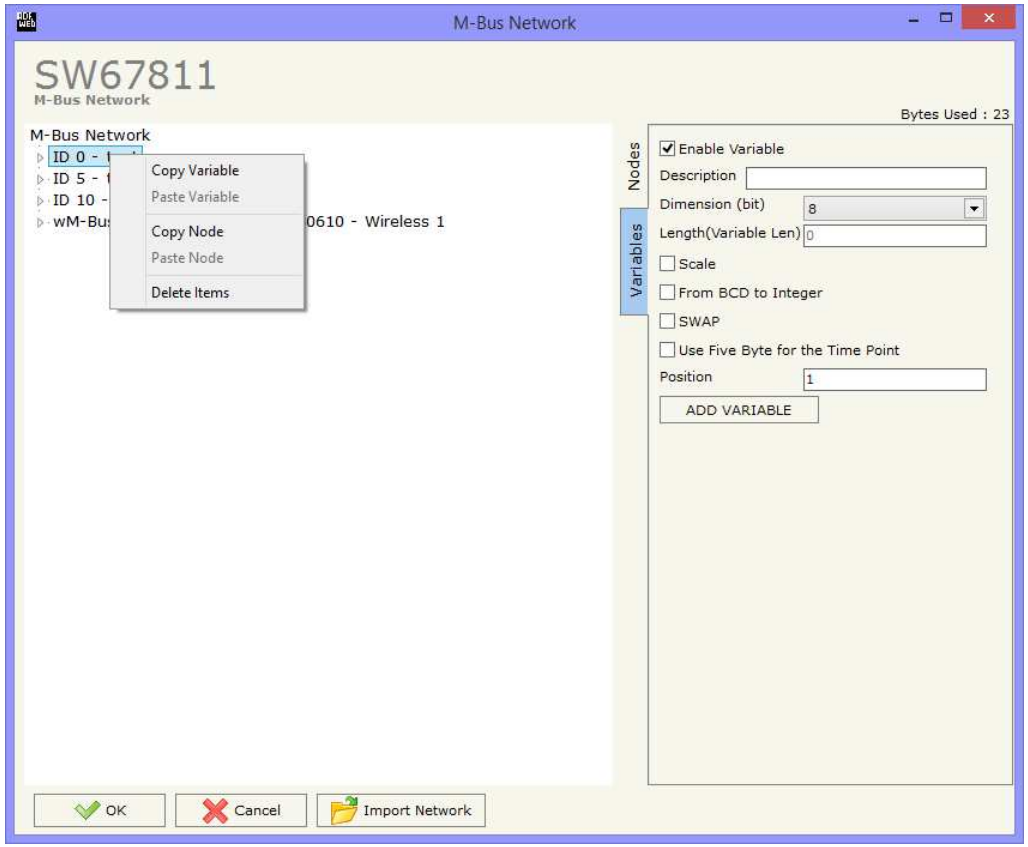
Example:


0x68 - Start Byte
0xBD - L Fied
0xBD - L Field
0x68 - Start Byte
0x08 - C Field
0x02 - A Field
0x72 - CI Field
0x71 - Identification Number (Byte 4of4)
0x65 - Identification Number (Byte 3of4)
0x45 - Identification Number (Byte 2of4)
0x28 - Identification Number (Byte 1of4)
0x4D - Manufacturer (Byte 2of2)
0x6A - Manufacturer (Byte 1of2)
0x81 - Version
0x04 - Medium
0x3E - Access Number
0x27 - Status
0x00 - Signature (Byte 2of2)
0x00 - Signature (Byte 1of2)
0x04 - DIF
0x79 - VIF Identification
0x00 - Data (Byte 4of4)
0x00 - Data (Byte 3of4)
0x00 - Data (Byte 2of4)
0x00 - Data (Byte 1of4)
0x04 - DIF
0x06 - VIF Energy
0x00 - Data (Byte 4of4)
0x00 - Data (Byte 3of4)
0x00 - Data (Byte 2of4)
0x00 - Data (Byte 1of4)
0x44 - DIF
0x06 - VIF Energy
0x00 - Data (Byte 4Of4)
0x00 - Data (Byte 3Of4)
0x00 - Data (Byte 2Of4)
0x00 - Data (Byte 1Of4)
...
... Other Variables
...
0x55 - Check Sum
0x16 - Stop Byte
Identification Number (or Secondary Address) put in the reserved fields if "Identification Number" is checked
Fixed Data Header
Status of the meter put in the reserved field if "Node State" is checked
First Variable (1)
Second Variable (2)
Third Variable (3)
To be use in the "Position" field

COPY, PASTE AND DELETE ITEMS:

By pressing the right button of the mouse over an item (Variable or Node) it is possible to Copy, Paste and Delete.
It is possible to Copy a variable from a Node and copy it to another Node, or copy a Variable from a project and paste in another one.
It is also possible to copy an entire Node with all its Variables.

Note:
By pressing the "**Import Network**" button is possible to import the file generated by the Analyzer HD67031.



Possible choices for the fields used to create a variable:

Type of Data:
|_Energy (Wh)
|_Energy (J)
|_Volume (m^3)
|_Mass (Kg)
|_On Time
|_Operating Time
|_Power (W)
|_Power (J/h)
|_Volume Flow (m^3/h)
|_Volume Flow Ext. (m^3/min)
|_Volume Flow Ext. (m^3/s)
|_Mass Flow (Kg/h)
|_Flow Temperature (°C)
|_Return Temperature (°C)
|_Temperature Difference (K)
|_External Temperature (°C)
|_Pressure (bar)
|_Averaging Duration
|_Actuality Duration
|_Type of data in VIFE
|_Time Point
|_VIF is in ASCII
|_Unit for H.C.A.
|_Fabrication No
|_(Enhaced) Identification
|_Bus Address

Function Field:
|_Instantaneous Value
|_Minimum Value
|_Maximum Value
|_Value During Error State

Dimension (bit):
|_8
|_16
|_24
|_32
|_32 real
|_48
|_64
|_Variable Length

VIFE:

|_ Not Selected
|_ Credit of the nominal local legal currency units
|_ Debit of the nominal local legal currency units
|_ Access Number (transmission count)
|_ Medium (as in fixed header)
|_ Manufacturer (as in fixed header)
|_ Parameter set identification
|_ Model/Version
|_ Hardware Version #
|_ Firmware Version #
|_ Software Version #
|_ Customer Location
|_ Customer
|_ Access Code User
|_ Access Code Operator
|_ Access Code System Operator
|_ Access Code Developer
|_ Password
|_ Error flags (binary)
|_ Error mask
|_ Digital Output (binary)
|_ Digital Input (binary)
|_ Baudrate [Baud]
|_ response delay time [bittimes]
|_ Retry
|_ First storage # for cyclic storage
|_ Last storage # for cyclic storage
|_ Size of storage block
|_ Storage interval [sec(s)..day(s)]
|_ Storage interval month(s)
|_ Storage interval year(s)
|_ Duration since last readout[sec(s)..day(s)]
|_ Start (date/time) of tariff
|_ Duration of tariff (nn=01..11:min to day)
|_ Period of tariff [sec(s) to day(s)]
|_ Period of tariff months(s)
|_ Period of tariff year(s)
|_ dimensionless/ no VIF
|_ Volts
|_ Ampere
|_ Reset counter
|_ Comulation counter
|_ Control signal
|_ Day of week
|_ Week number
|_ Time point of day change
|_ State of parameter activation
|_ Special supplier information
|_ Duration since last comulation [hour(s)..year(s)]
|_ Operation time battery [hour(s)..year(s)]
|_ Date and time of battery change
|_ Energy MWh
|_ Energy GJ
|_ Volume
|_ Mass
|_ Volume 0,1 feet^3
|_ Volume 0,1 american gallon
|_ Volume 1 american gallon
|_ Volume flow 0,001 american gallon/min
|_ Volume flow 1 american gallon/min
|_ Volume flow 1 american gallon/h
|_ Power MW
|_ Power GJ/h
|_ Flow Temperature
|_ Return Temperature
|_ Temperature Difference
|_ External Temperature
|_ Cold/Warm Temperature Limit °F
|_ Cold/Worm Temperature Limit °C
|_ Cumul. count max power

|_ per second
|_ per minute
|_ per hour
|_ per day
|_ per week
|_ per month
|_ per year
|_ per revolution/measurement
|_ increment per input pulse on input channel
|_ increment per output pulse on output channel
|_ per liter
|_ per m^3
|_ per kg
|_ per K (Kelvin)
|_ per kWh
|_ per GJ
|_ per kW
|_ per (K*l)(Kelvin*liter)
|_ per V (Volt)
|_ per A (Ampere)
|_ multiplied by sek
|_ multiplied by sek/V
|_ multiplied by sek/A
|_ start date(/time) of
|_ VIF contains uncorrected unit instead of corrected unit
|_ Accumulation only if positive contributions
|_ Accumulation of abs value only if negative contributions
|_ upper/lower limit value
|_ # of exceeds of lower/upper limit
|_ Date(/time) of begin/end of first/last lower/upper limit exceed
|_ Duration of limit exceed
|_ Duration of first/last
|_ Date(/time) of first/last begin/end
|_ Multiplicative currection factor
|_ Additive correction constant * unit of VIF (offset)
|_ Moltiplicative correction factor: 10^3
|_ future value
|_ next VIFE's and data of this block are manufacturer specific
|_ None
|_ Too many DIFE's
|_ Storage number not implemented
|_ Unit number not implemented
|_ Tariff number not implemented
|_ Function not implemented
|_ Data class not implemented
|_ Data size not implemented
|_ Too many VIFE's
|_ Illegal VIF-Group
|_ Illegal VIF-Exponent
|_ VIF/DIF mismatch
|_ Unimplemented action
|_ No data available (undefined value)
|_ Data overflow
|_ Data underflow
|_ Data error
|_ Premature end of record

Swap Identification:

This field is used for select the Swap mode of Identification Number.

At the moment there are these possibilities:

- None;
- Type 1.

Examples:

- Identification Number (Secondary Address): 28456571; Convert BCD in Integer Identification Num. Not checked.

None	Type 1
0x28	0x65
0x45	0x71
0x65	0x28
0x71	0x45

- Identification Number (Secondary Address): 28456571; Convert BCD in Integer Identification Num. Checked.

None	Type 1
0x01	0x36
0xB2	0x7B
0x36	0x01
0x7B	0xB2

To know the meaning of value read in the "Scale" field, you must follow this table (x = Value read in Scale byte):

Description	Range Coding	Range
Energy	$10^{(x-3)}$ Wh	0.001 Wh to 10000 Wh
Energy	$10^{(x)}$ J	0.001 kJ to 10000 kJ
Volume	$10^{(x-6)}$ m^3	0.001 l to 10000 l
Mass	$10^{(x-3)}$ kg	0.001 kg to 10000 kg
On Time	x = 0 Seconds x = 1 Minutes x = 2 Hours x = 3 Days	
Operating Time	coded like On Time	
Power	$10^{(x-3)}$ W	0.001 W to 10000 W
Power	$10^{(x)}$ J/h	0.001 kJ/h to 10000 kJ/h
Volume Flow	$10^{(x-6)}$ m^3/h	0.001 l/h to 10000 l/h
Volume Flow Ext.	$10^{(x-7)}$ m^3/min	0.0001 l/min to 1000 l/min
Volume Flow Ext.	$10^{(x-9)}$ m^3/s	0.001 ml/s to 10000 ml/s
Mass Flow	$10^{(x-3)}$ kg/h	0.001 kg/h to 10000 kg/h
Flow Temperature	$10^{(x-3)}$ °C	0.001 °C to 1 °C
Return Temperature	$10^{(x-3)}$ °C	0.001 °C to 1 °C
Temperature Difference	$10^{(x-3)}$ K	1 mK to 1000 mK
External Temperature	$10^{(x-3)}$ °C	0.001 °C to 1 °C
Pressure	$10^{(x-3)}$ bar	1 mbar to 1000 mbar
Averaging Duration	coded like On Time	
Actuality Duration	coded like On Time	
Time Point	x = 0 Date x = 1 Time&Date	Data type G Data type F
Unit for H.C.A.		dimensionless

Data type F:

2^7	2^6	2^5	2^4	2^3	2^2	2^1	2^0
2^{15}	2^{14}	2^{13}	2^{12}	2^{11}	21^0	2^9	2^8
2^{23}	2^{22}	2^{21}	22^0	2^{19}	2^{18}	2^{17}	2^{16}
2^{31}	2^{30}	2^{29}	2^{28}	2^{27}	2^{26}	2^{25}	2^{24}

Min (0 ... 59);
Hour (0 ... 23);
Day (1 ... 31);
Month (1 ... 12);
Year (0 ... 99);
Time Invalid (0=Valid, 1=Invalid);
Summer Time (0=Standard Time, 1=Summer Time);
Reserved (0).

Data type G:

2^7	2^6	2^5	2^4	2^3	2^2	2^1	2^0
2^{15}	2^{14}	2^{13}	2^{12}	2^{11}	21^0	2^9	2^8

Day (1 ... 31);
Month (1 ... 12);
Year (0 ... 99).

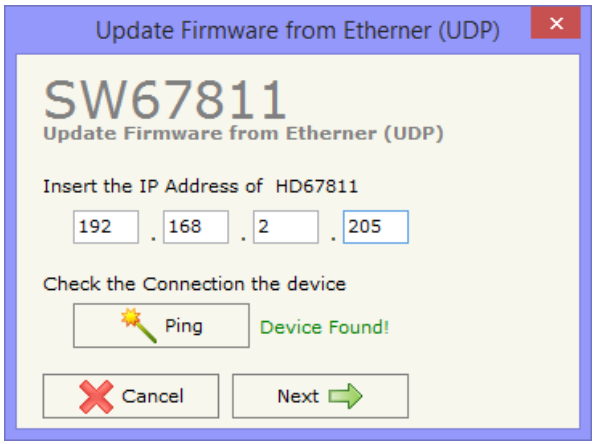
UPDATE DEVICE:

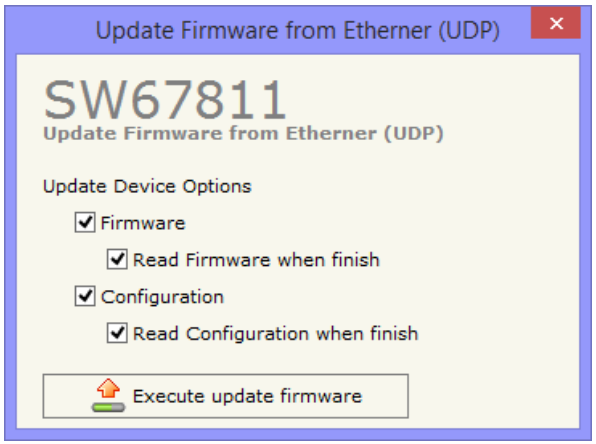
By pressing the "**Update Device**" button, it is possible to load the created Configuration into the device; and also the Firmware, if necessary.

If you don't know the actual IP address of the device you have to use this procedure:

- Turn off the Device;
- Put Dip1 of 'Dip-Switch A' at ON position;
- Turn on the device
- Connect the Ethernet cable;
- Insert the IP "**192.168.2.205**";
- Press the "**Ping**" button, "Device Found!" must appear";
- Press the "**Next**" button;
- Select which operations you want to do;
- Press the "**Execute update firmware**" button to start the upload;
- When all the operations are "OK" turn off the Device;
- Put Dip1 of 'Dip-Switch A' at OFF position;
- Turn on the device.

At this point the configuration/firmware on the device is correctly updated.





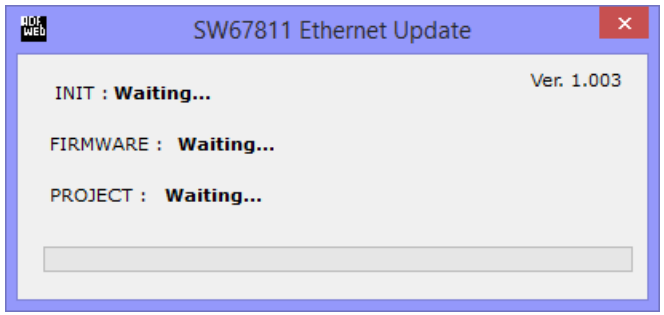


Figure 6: "Update device" windows

If you know the actual IP address of the device you have to use this procedure:

- Turn on the Device with the Ethernet cable inserted;
- Insert the actual IP of the Converter;
- Press the "**Ping**" button, must appear "Device Found!";
- Press the "**Next**" button;
- Select which operations you want to do;
- Press the "**Execute update firmware**" button to start the upload;
- When all the operations are "OK" the device automatically goes at Normal Mode.

At this point the configuration/firmware on the device is correctly updated.

Note:
When you install a new version of the software, if it is the first time it is better you do the update of the Firmware in the HD67811 device.

Note:
When you receive the device, for the first time, you also have to update the Firmware in the HD67811 device.

Warning:
If Fig. 7 appears when you try to do the Update try these points before seeking assistance:

- Try to repeat the operations for the updating;
- Try with another PC;
- Try to restart the PC;
- If you are using the program inside a Virtual Machine, try to use in the main Operating System;
- If you are using Windows Seven or Vista or 8, make sure that you have the administrator privileges;
- Take attention at Firewall lock;
- Check the LAN settings.

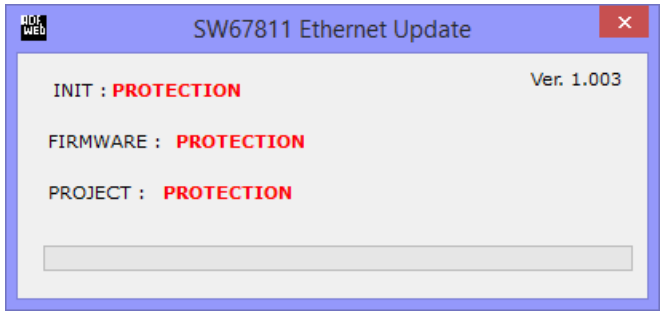


Figure 7: "Protection" window

In the case of HD67811 you have to use the software "SW67811": www.adfweb.com\download\filefold\SW67811.zip.

MECHANICAL DIMENSIONS:

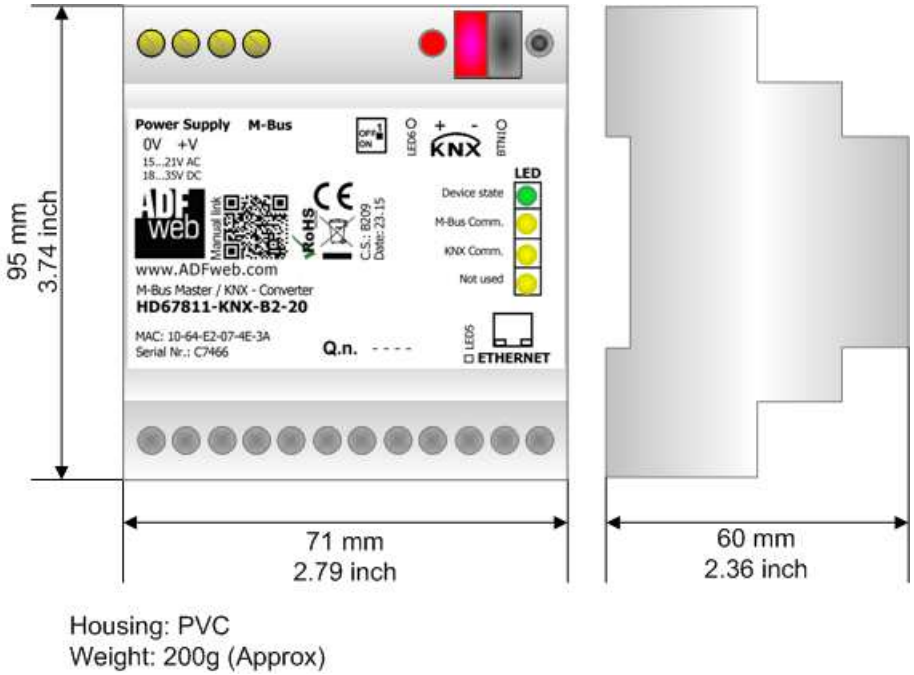


Figure 8: Mechanical dimensions scheme for HD67811-KNX-B2

ORDERING INFORMATIONS:

The ordering part number is formed by a valid combination of the following:

HD67811 – KNX – B 2 – xxxMHz - xxx

Number of Slaves connectable to the M-Bus port
0: only M-Bus Wireless port
20: M-Bus Wireless port + M-Bus port (up to 20 standard M-Bus slaves)
40: M-Bus Wireless port + M-Bus port (up to 40 standard M-Bus slaves)
80: M-Bus Wireless port + M-Bus port (up to 80 standard M-Bus slaves)
160: M-Bus Wireless port + M-Bus port (up to 160 standard M-Bus slaves)
250: M-Bus Wireless port + M-Bus port (up to 250 standard M-Bus slaves)

M-Bus Wireless Frequency
169: 169MHz
868: 868MHz
Field not present: only M-Bus port (on wire)

Connectors Type
2: Fixed 5mm Screw Terminal

Enclosure Type
B: 4M, 35mm DIN Rail mounting

Device Family
HD67811-KNX: M-Bus/M-Bus Wireless / KNX - Converter

Order Code: **HD67811-KNX-B2-20**	**-**	M-Bus Master / KNX – Converter (up to 20 M-Bus slaves)
Order Code: **HD67811-KNX-B2-40**	**-**	M-Bus Master / KNX – Converter (up to 40 M-Bus slaves)
Order Code: **HD67811-KNX-B2-80**	**-**	M-Bus Master / KNX – Converter (up to 80 M-Bus slaves)
Order Code: **HD67811-KNX-B2-160**	**-**	M-Bus Master / KNX – Converter (up to 160 M-Bus slaves)
Order Code: **HD67811-KNX-B2-250**	**-**	M-Bus Master / KNX – Converter (up to 250 M-Bus slaves)
Order Code: **HD67811-KNX-B2-169MHz-0**	**-**	M-Bus Wireless / KNX – Converter (wM-Bus @ 169MHz)
Order Code: **HD67811-KNX-B2-868MHz-0**	**-**	M-Bus Wireless / KNX – Converter (wM-Bus @ 868MHz)
Order Code: **HD67811-KNX-B2-169MHz-20**	**-**	M-Bus/M-Bus Wireless / KNX – Converter (up to 20 M-Bus slaves - wM-Bus @ 169MHz)
Order Code: **HD67811-KNX-B2-169MHz-40**	**-**	M-Bus/M-Bus Wireless / KNX – Converter (up to 40 M-Bus slaves - wM-Bus @ 169MHz)
Order Code: **HD67811-KNX-B2-169MHz-80**	**-**	M-Bus/M-Bus Wireless / KNX – Converter (up to 80 M-Bus slaves - wM-Bus @ 169MHz)
Order Code: **HD67811-KNX-B2-169MHz-160**	**-**	M-Bus/M-Bus Wireless / KNX – Converter (up to 160 M-Bus slaves - wM-Bus @ 169MHz)
Order Code: **HD67811-KNX-B2-169MHz-250**	**-**	M-Bus/M-Bus Wireless / KNX – Converter (up to 250 M-Bus slaves - wM-Bus @ 169MHz)
Order Code: **HD67811-KNX-B2-868MHz-20**	**-**	M-Bus/M-Bus Wireless / KNX – Converter (up to 20 M-Bus slaves - wM-Bus @ 868MHz)
Order Code: **HD67811-KNX-B2-868MHz-40**	**-**	M-Bus/M-Bus Wireless / KNX – Converter (up to 40 M-Bus slaves - wM-Bus @ 868MHz)
Order Code: **HD67811-KNX-B2-868MHz-80**	**-**	M-Bus/M-Bus Wireless / KNX – Converter (up to 80 M-Bus slaves - wM-Bus @ 868MHz)
Order Code: **HD67811-KNX-B2-868MHz-160**	**-**	M-Bus/M-Bus Wireless / KNX – Converter (up to 160 M-Bus slaves - wM-Bus @ 868MHz)
Order Code: **HD67811-KNX-B2-868MHz-250**	**-**	M-Bus/M-Bus Wireless / KNX – Converter (up to 250 M-Bus slaves - wM-Bus @ 868MHz)

ACCESSORIES:

Order Code: **APW020** - Power Supply for M-Bus Master device that supports up to 20 Slaves
Order Code: **APW040** - Power Supply for M-Bus Master device that supports up to 40 Slaves
Order Code: **APW080** - Power Supply for M-Bus Master device that supports up to 80 Slaves
Order Code: **APW0160** - Power Supply for M-Bus Master device that supports up to 160 Slaves
Order Code: **APW0250** - Power Supply for M-Bus Master device that supports up to 250 Slaves

DISCLAIMER:

All technical content within this document can be modified without notice. The content of the document is a under continual renewal.
For losses due to fire, earthquake, third party access or other accidents, or intentional or accidental abuse, misuse, or use under abnormal conditions repairs are charged to the user. ADFweb.com S.r.l. will not be liable for accidental loss of use or inability to use this product, such as loss of business income. ADFweb.com S.r.l. shall not be liable for consequences of improper use.

OTHER REGULATIONS AND STANDARDS:

WEEE INFORMATION

Disposal of old electrical and electronic equipment (as in the European Union and other European countries with separate collection systems).

This symbol on the product or on its packaging indicates that this product may not be treated as household rubbish. Instead, it should be taken to an applicable collection point for the recycling of electrical and electronic equipment. If the product is disposed correctly, you will help prevent potential negative environmental factors and impact of human health, which could otherwise be caused by inappropriate disposal. The recycling of materials will help to conserve natural resources. For more information about recycling this product, please contact your local city office, your household waste disposal service or the shop where you purchased the product.

RESTRICTION OF HAZARDOUS SUBSTANCES DIRECTIVE

The device respects the 2002/95/EC Directive on the restriction of the use of certain hazardous substances in electrical and electronic equipment (commonly referred to as Restriction of Hazardous Substances Directive or RoHS).

CE MARKING

The product conforms with the essential requirements of the applicable EC directives.

WARRANTIES AND TECHNICAL SUPPORT:

For fast and easy technical support for your ADFweb.com SRL products, consult our internet support at www.adfweb.com.
Otherwise contact us at the address support@adfweb.com

RETURN POLICY:

If while using your product you have any problem and you wish to exchange or repair it, please do the following:

- Obtain a Product Return Number (PRN) from our internet support at www.adfweb.com. Together with the request, you need to provide detailed information about the problem.
- Send the product to the address provided with the PRN, having prepaid the shipping costs (shipment costs billed to us will not be accepted).

If the product is within the warranty of twelve months, it will be repaired or exchanged and returned within three weeks. If the product is no longer under warranty, you will receive a repair estimate.

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